

Bleeding under Liver Capsula-What Time to Surgery?

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Opinion

Bleeding under hepatic capsula is a special condition of liver trauma. Its development is often unpredictable, which may lead to fatal consequence if nonsurgical management is useless to control bleeding. Hence, bleeding under capsula is becoming an occult killer due to abrupt deadly shock. Sometimes, bleeding seems to be uncontrollable even if emergent surgery performed timely. Obviously, the optimized timing for surgery may have been lost to save patients' lives, or there is no way to settle the dilemma in this working situation, which arouses people's great attention.

To the best of our knowledge, there are three major reasons to bring about bleeding under hepatic capsula. Firstly, the accident trauma may be the most frequently seen in clinical practice. It occurs in anywhere of liver and its severity varies according to the range of substantial liver tissue damaged or/and whether important vessels ruptured or not. It can be easily confirmed by imaging examination such as ultrasonography, (enhanced) abdominal computered tomography (CT), etc.

Secondly, spontaneous rupture of malignant tumor often happens at the surface of liver, in which the patient could not bear dull-like pain and discomfort of abdominal distention if the rising pressure under liver capsula has exceeded the capacity of hepatic capsula. Finally, bleeding in the central zone of liver is seldom reported in previous literature, which is triggered by undesired iatrogenic vessels injuries during interventional procedures such as biopsy of nodular mass or tumor, radiofrequency therapy for malignancy, etc.

Based on our past 20-year experiences or lessons, the type of bleeding may hide the truth in the minor imaging findings and stable hemodynamic status or laboratory data. Furthermore, the definitive time of hepatic capsula's rupture is uncertain. What timing for surgery is really a big challenge for surgeons' decision-making.

In our opinion, this special type of liver bleeding, severely threatening the patients' lives, should be ignored no longer. It's time to take proper judgement rather than only "wait-to-see" or excessive earlier surgical intervention, which cannot bring the maximum beneficial outcome, reversely, the in proper active management in a wrong timing may take adverse effects. The mortality rate among the patients in intensive care unit is higher compared to the patients in general wards. It is partly associated with cross infection or the patients' morbidity. Hence, both of the optimized timing for surgery and right strategies are of crucial importance.

Here in, authors propose a 3-E steps, aims to create a reliable judgement system shown below.

Evaluation and re-evaluation

Referred to guideline and classification of liver trauma, it's necessary to identify the type of liver trauma and to judge its severity at the first time [1]. The primary judgement may be built based on abdominal CT scan. The visual CT directly reveals major vessels or their branches injuries.

Examination

As it is well known, the occult liver trauma may result in asymptomatic or minor symptomatic patients in its earlier stage. However, the steadily increasingly bleeding under liver capsula may beyond the limit of burden of hepatic capsula. In addition, some iatrogenic procedures such as radiofrequency therapy of malignant tumor via hot-efeteness may also injury adjacent vessels and produce a delayed hot injury. Actually, it's very difficult to predict ahead. Therefore, active examinations for a short-term (1~2 week) including hemoglobin, physical examination, re-evaluation of CT scan, etc. will help us to focus on their trends or further steps to take [2].

Efforts

Multidisciplinary team for any liver trauma will provide a detailed protocol. Noninvasive or minor invasive techniques should be the priority. For example, mesh-wrapping and ligation of portal vein branch may be a successful one [3].

What time for surgery remains controversial according to different expertise. In general, Child-Pugh score (>7) or model of end liver disease (MELD) score (>11) for the patient with liver trauma, therapy with transcatheter arterial embolization (TAE) may be safer compared to surgery.

Based on authors' suggestions, two thirds of evidences emerged simultaneously may be the right timing for surgical intervention.

- Clinical presentations worsening
- Twisted shape of liver or ballooned capsula of liver based on evidence of CT imaging or ultrasonography
- Unstable hemodynamic circulation or descending hemoglobin

In conclusion, a reasonable strategy for this occult trauma should be coincided with the principle of enhanced recovery after surgery (ERAS). Raising the awareness of the special type of liver bleeding will be favorable for both of surgeons and patients.

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